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that a nodal passage occurred on 1847, Oct. $2^{d}\cdot745$, Greenwich Mean Time, and that the period (as indicated by the whole series of observations) is $5^{d}\cdot8750$, the angles of position observed by Mr. Lassell and Professor Bond are well represented; but the measures of M. Otto Struve present a marked disagreement in angle, the mean error of calculation, according to eleven observations by this astronomer, being $+6^{\circ}\cdot6$: the individual errors are uniformly in excess. I can discover no mistake in my computations, and can only suppose that we have here another instance of a constant personal equation affecting the measured angles of position, similar to that which has been pointed out by Sir John Herschel in Professor Struve's observations of γ *Virginis*, and in Professor Mädler's more recent measures of the same star.

"The distances present a similar anomaly. Treating the observations at the three observatories separately, I find,—

The Apparent Mean Distance of Satellite from Planet's centre,

		″
At Distance = 30·0,	by Professor Bond's observations	16·102
—— —	by Mr. Lassell's observations	16·423
—— —	by M. Otto Struve's observations	18·060

"The values inferred from the English and American measures agree as nearly as can be expected from the number of observations employed. The Pulkova distance is nearly two seconds greater than this mean, a quantity sufficient to produce a very material alteration in the mass of the planet as determined by observations of the satellite.

"The cause of these differences may, perhaps, be explained hereafter; but the knowledge that such constant discordances may exist between different observers will probably tend to throw much uncertainty over the values of the planet's mass deduced from actual observation.

"If we assign to each of the above results its proper weight depending on the number of measures on which it is founded, we shall have for the radius of the satellite's orbit at the same unit of distance,

$$16''\cdot748,$$

and supposing the periodic time $5^{d}\cdot8750$, which must be close upon the truth, the mass of *Neptune* comes out

$$\frac{1}{17900}.$$

"The distance of the satellite from the planet's centre appears to be 232·000 miles."

On the first Comet of Brorsen, 1846. By Mr. Hind.

"In the *Monthly Notice* of this Society for November 1846, I pointed out the remarkably close approach of the periodical comet

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of Brorsen to the planet *Jupiter* in May 1842; the result there given being founded upon Dr. Brünnow's approximate elements. Having since calculated an orbit from the whole extent of observation, I recomputed the distances between the planet and comet between May 0 and June 9, and the results seem to establish the fact of a very near approach, though not quite so close as Dr. Brünnow's elements had indicated. My corrected orbit is as follows:—

Epoch of Mean Anomaly, 1846, March 0·0, G.M.T. = 0° 27′ 24″·6

	°	′	″	
Longitude of Perihelion..	116	28	23·9	Mean Equinox of Epoch.
Ascending Node........	102	37	40·5	
Inclination	30	57	50·8	
Angle of Excentricity ...	52	36	15·2	
Log. Semi-axis Major	0·5000430			
Period of Revolution	5^yrs·624			

"Referring the co-ordinates of the comet and planet to the ecliptic, we find,

G.M.T. 1842.	Comet. x	y	z	Jupiter. x′	y′	z′
May 0	+ 1·1902	−5·0230	−0·0372	+ 1·0666	−5·0775	−0·0062
10	·2261	·0426	·0559	·1396	·0578	·0079
20	·2621	·0619	·0749	·2126	·0372	·0097
30	·2982	·0806	·0934	·2851	5·0155	·0114
June 9	+ 1·3344	−5·0987	−0·1120	+ 1·3576	−4·9926	−0·0131

whence the real distances between the comet and *Jupiter* will be,

May 0 = 0·1386
10 = 0·1001
20 = 0·0856
30 = 0·1055
June 9 = 0·1468

"The nearest approach would occur about May 19, on which day the distance would amount to 0·085, or 8,100,000 miles. These results are, of course, independent of the effect of perturbation between 1842 and 1846, but they appear to shew that the calculation of *Jupiter's* disturbances backward to the early part of the former year would conduce to some very interesting results. The similarity between the orbit of Brorsen's comet and those of the comets of 1532 and 1661, long supposed to be identical, may of itself be considered sufficient inducement to some one accustomed to these intricate computations to undertake the solution of the question with all possible accuracy."

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